

REMARKS

Applicants reply to the Office Action dated January 25, 2007 within three-months. The Examiner rejects claims 1-18 and 24 in the subject application. Applicants amend claims 1 and 4. Support for the various amendments may be found in the originally filed specification, claims, and figures. No new matter has been introduced by these amendments. Reconsideration of this application is respectfully requested.

The Examiner rejects claims 1-3, 7-17 and 24 under 35 U.S.C. 103(a) as being obvious over McGrath, U.S. Patent No. 6,021,206 ("McGrath"). The Examiner next rejects claims 4-6 under 35 U.S.C. 103(a) as being obvious over McGrath and Tanaka et al., U.S. Patent No. 5,598,478 ("Tanaka"). The Examiner next rejects claim 18 under 35 U.S.C. 103(a) as being obvious over McGrath and Saito et al., U.S. Patent No. 3,766,547 ("Saito"). Applicants respectfully traverse these rejections.

To expedite prosecution, Applicants amend claim 1 to recite, "a memory for receiving at least one filter coefficients from outside the signal processing apparatus and storing a plurality of filter coefficients, including the at least one filter coefficients received, for correcting the acoustic signal". Applicants assert that this amendment simply incorporates the features already presented in claim 4. **Therefore, even though this Office Action is final, Applicants assert that such amendment should be entered and considered without requiring an RCE because no new issues have been raised.**

Claim 1 recites in part (emphasis added):

a filter coefficient selection section for receiving a correction command, from outside the signal processing apparatus, for specifying a correction method for the acoustic signal and selecting at least one of the plurality of filter coefficients stored in the memory based on the correction command; and

a correction section for correcting the correcting the acoustic signal using the at least one filter coefficient selected by the filter coefficient selection section so as to correct any discrepancies in the relationship between the acoustic signal and the image signal being reproduced together.

Applicants provide the Examiner an illustrative example of these claim elements. With reference to Figure 1A, the present invention discloses that signal processing apparatus 1a includes a memory 4 for storing a plurality of filter coefficients for correcting the acoustic signal AS, a filter coefficient selection section 3 for receiving the correction command from outside the signal processing apparatus 1a and selecting at least one of the plurality of filter coefficients stored in the memory 4 based on the correction command, and a correction section 5 for correcting the acoustic signal AS using the at least one filter coefficient selected by the filter coefficient selection section 3 (e.g., page 18, lines 18-27). In particular, the present invention allows the viewer/listener 8 to listen to the sound which is matched to the image displayed by the image display apparatus 7 through the headphones 6. As a result, the viewer/listener 8 does not notice any discrepancies in a relationship between the image and the sound (e.g., page 31, line 31 - page 32, line 7).

In contrast, McGrath discloses an apparatus for sound reproduction of a sound information signal having spatial components (e.g., col. 1, lines 39-42 of McGrath). For example, with reference to Figure 1, McGrath discloses a B-format creation system 2, an orientation head tracking means 5, 7 and 9, a rotation means 6, and a conversion to output format means 8. In particular, McGrath discloses that the rotation means 6 rotates the output coordinates (x, y, z, w) of B-format creation system 2 according to the rotation coordinates measured by the tracking means 5, 7 and 9 to produce new output coordinates (x', y', z', w') which compensate for the turning of the listener's 3 head. Therefore, such rotation of the B-format output (x, y, z, w) relative to the turning of the listener's 3 head will create an illusion of the sound sources being located at the desired position in a room, independent of the listener's 3 head angle (e.g., col. 5, lines 35-61).

Accordingly, Applicants assert that it is clear to one ordinary skilled in the art that McGrath has not been found to teach or suggest an exemplary advantage associated with the present invention, namely that the viewer/listener 8 does not notice any discrepancies in a relationship between the image and the sound. Accordingly, Applicants assert that McGrath has not been found to teach or suggest at least, "a correction section for correcting the acoustic signal using the at least one filter coefficient selected by the filter coefficient selection section so as to correct any discrepancies in the relationship between the acoustic signal and the image signal being reproduced together," (emphasis added) as recited in independent claim 1.

The Examiner alleges that McGrath teaches, “a head tracking device (5) and (9) that sends a signal to a correction section to correct the rotation of the sound stage with respect to the rotation of a listener’s head”. However, Applicants assert that, although McGrath may disclose that the audio inputs are rotated (“corrected”) by the rotation means 6 in accordance with the turning of the listener’s 3 head so as to create an illusion of the sound sources being located at the desired position in a room, McGrath has not been found to disclose that such rotation (“correction”) is performed to correct any discrepancies in the relationship between the acoustic signal and the image signal being reproduced together. In fact, McGrath has been found to disclose the processing and reproduction of audio inputs only (e.g., Figures 1-7 of McGrath), but fails to teach how one skilled in the art can correct any discrepancies in the relationship between the acoustic signal and the image signal being reproduced together.

In addition, the Examiner agrees that McGrath fails to disclose a correction section for correcting the acoustic signal “using the at least one of a plurality of filter coefficients selected by a filter coefficient selection section whereby the plurality of filter coefficients are stored in a memory,” as recited by claim 1. However, the Examiner alleges that the rotation matrix calculation means 7 is equivalent to the “correction section” of claim 1 and that it would have been obvious for one of ordinary skill in the art to combine the teachings of pre-computed coefficients (col. 9, line 60 - col. 10, line 3) within the rotation matrix calculation section 7 for the purpose of reducing computational time. In particular, the Examiner alleges that it would have been obvious to modify the rotation matrix calculation section 7 in such a way that the computation of the coefficient rotation matrix R is stored in a memory for selection (e.g., page 3, lines 9-19 of the Office Action).

Applicants respectfully disagree with the Examiner’s motivation to modify the invention as disclosed by McGrath. First, the Examiner fails to clearly explain how storing pre-computed coefficient rotation matrix R within the rotation matrix calculation means 7 in a memory would help to reduce computational time. Nevertheless, Applicants assert that McGrath has not been found to disclose the desire to store pre-computed coefficient rotation matrix R in a memory. The Examiner alleges that, since McGrath discloses FIR that filter coefficients for FIR filters 70 can be pre-computed (see col. 9, lines 60-65), coefficient rotation matrix R can also be pre-computed.

However, Applicants assert that FIR filters 70 and rotation matrix R are not equivalent and have different functions.

Moreover, assuming that such modification as suggested by Examiner for reducing computational time exists when a coefficient rotation matrix R for a coordinate of the listener's 3 head is calculated, such rotation matrix R is stored as pre-computed coefficient. Therefore, for that particular coordinate of the listener's 3 head, a rotation matrix R will not required to be calculated again. However, such modification as suggested by the Examiner would inevitably result in a complexity such that an extensive set of pre-computed coefficient rotation matrix R (one matrix R for each coordinate of the listener's 3 head, even a slight movement of the head) will be generated and additional memories and circuitries will be required to search through such extensive set of pre-computed coefficient rotation matrix R to find one which corresponds to a particular coordinate of the listener's 3 head. As a result, Applicants assert that such modification would increase computational time, cost, and power, contrary to that asserted by the Examiner. Regardless, one skilled in the art would not know how to perform such modification without undue experiments and going far beyond the disclosure of McGrath.

Therefore, Applicants assert that one skilled in the art would not have been motivated to modify McGrath as suggested by the Examiner because McGrath has not been found to disclose the motivation provided by the Examiner, would require undue experiments to redesign of the rotation matrix calculation means 7 away from that disclosed by McGrath, and would result in the exemplary disadvantages mentioned above.

According to Section 2143.01(III) of the MPEP, "[t]he mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination". In *re* Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990). Recognizing, after the fact, that a proposed modification would provide an improvement or advantage, without suggestion thereof by the prior art, rather than dictating a conclusion of obviousness, is an indication of improper application of hindsight considerations. Simplicity and hindsight are not proper criteria for resolving obviousness. In *re* Warner, 379 F.2d 1011, 154, USPQ 173 (CCPA 1967). Moreover, it is impermissible simply to engage in hindsight reconstruction of the claimed invention, using Applicants' structure as a template and selecting

elements from references to fill in the gaps, in re *Gorman*, 18 USPQ2d 1885 (Fed. Cir. 1991). Accordingly, for at least the arguments as presented above, the Examiner to has failed to establish prima facie obviousness.

Therefore, the obviousness rejection on independent claim 1 in view of McGrath should be withdrawn. In addition, neither Tanaka nor Saito has been found to make up for the deficiencies in McGrath to arrive at claim 1. Similarly, the rejection on the remaining dependent claims should also be withdrawn.

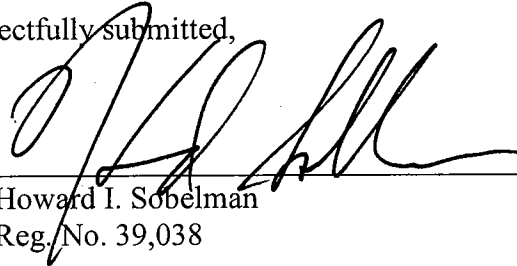
Furthermore, Applicants assert that with the structure of claim 1, a viewer can listen from a headphone the sound which matches the image displayed on the image display apparatus. Additionally, the viewer can select a filter coefficient and can listen from the headphone the sound which is the most suitable to the preference of the viewer. Following the change of an image signal and/or the change of an acoustic signal, the acoustic signal is corrected at a correction section. As a result, an effect in which a viewer does not have any uncomfortable feeling between his visual sense and auditory sense is obtained.

In contrast, Applicant asserts that McGrath describes an apparatus for only processing a spatial acoustic signal and it does not relate to an image signal reproduced together with the acoustic signal, as recited in claim 1. Accordingly, McGrath does not disclose the structure of the correction section, as recited in claim 1. In addition, a sensor attached to a head as disclosed in McGrath and a controller as disclosed in Tanaka or Saito are always used with signal processing apparatuses on one-to-one-relationship basis. Thus, the sensor and controller are part of the signal processing apparatuses. However, the cited references do not disclose a structure of externally receiving a filter coefficient and a correction command, as recited in claim 1. Therefore, Applicants assert that the structures as disclosed in the cited references can only correct an acoustic signal within a preset range and cannot achieve an objective of eliminating the uncomfortable feeling between the visual sense and the auditory sense, as described in the presently claimed invention.

Dependent claims 2-18 and 24 variously depend from independent claim 1, so Applicants assert that claims 2-18 and 24 are differentiated from the cited references for the reason set forth above, in addition to their own respective features.

Applicants respectfully submit that the pending claims are in condition for allowance. The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment, to Deposit Account No. **19-2814**. If an extension of time is necessary, please accept this as a petition therefore. Applicants invite the Examiner to telephone the undersigned if the Examiner has any questions regarding this Reply or the present application in general.

Respectfully submitted,



By: _____

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